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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/815,983	03/23/2001	Mark Lynn Jenson	1327.005US1	7609

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EXAMINER

WINTER, GENTLE E

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 10/24/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/815,983

Applicant(s)

JENSON ET AL.

Examiner

Gentle E. Winter

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34,36 and 37 is/are pending in the application.
- 4a) Of the above claim(s) 27-34,36 and 37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I in Paper No. 5 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

DETAILED ACTION

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

- a. In Figure 7, the reference sign **714** is missing (page 29, line 9);
- b. In Figure 9A, the reference signs, **922, 926, 928** and **932** are missing (page 42, lines 8, 17, 18 and 22);
- c. In Figure 19A, the reference signs **1110** and **1110'** are missing (page 59, line 18);
- d. In Figure 26A, the reference sign **2320** is not shown (page 72, line 23);
- e. The reference sign **2400** is not shown (page 73, line 27); and
- f. In Figure 28C, the reference sign **2800'** is not shown (page 80, line 20).

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

- a. The reference sign **257C** is not described (Fig. 2C);
- b. The reference sign **16E** is not described (Fig. 16E)
- c. The reference sign **2323** is not described (Fig. 23 and 25A);

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- c. The reference sign **2467** is not described (Fig. 24D);
 - d. The reference signs **2543** and **2546** are not described (Fig. 25C);
 - e. The reference sign **2563** is not described (Fig. 25F);
 - f. The reference signs **2518** and **2519** are not described (Fig. 26A);
 - g. The reference sign **2791** is not described (Fig. 27L);
 - h. The reference sign **2963** is not described (Fig. 29A);
 - i. The reference signs **2966**, **2967** and **2968** are not described (Fig. 29C); and
 - j. The reference signs **2914** and **2915** are not described (Fig. 29I).
4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character “**713**” has been used to designate both an end roll (page 28, line 29) and an assist source (page 29, line 13).
5. Reference character “**2207**” has been used to designate both an integrated device (page 63, line 26) and a different integrated device (page 64, line 7).
6. The reference character “**2430**” has been used to designate both a supercapacitor device (page 66, line 8) and an integrated circuit (page 66, line 8).
7. The reference character “**2540**” has been used to designate an Integrated circuit (page 71, line 8), a lower substrate (page 71, line 11), wires (page 71, line 11), a product package (page 71, line 18) and processed circuits (page 72, line 17).
8. The reference character “**2660**” has been used to designate both a receiving loop (page 73, line 18) and a layer-deposition system (page 74, line 5).

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9. The drawings are objected because for the following informalities:
 - a. Figures 15D, 15E and 16D should include reference numbers describing that which is being shown;
 - b. In Figure 15K, the reference sign "11100" should be changed to --1100--;
 - c. In Figures 16A and 16B, the same reference signs 1390 and 1392 should not be used for both figures (each drawing should be independent);
 - d. In Figure 17, the reference sign 1300 should be deleted because it does not match the description (page 58, lines 8-9);
 - e. In Figure 21A, please change the reference signs "1800", "1920" and "1930" to --1900--, --1910-- and --1920--, respectively;
 - f. In Figure 21B, please change the reference sign "1940" to --1930--; and
 - g. In Figure 26B, please delete the reference sign "2460".

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

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10. A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

11. Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. Claims 1-12, 14, and 16-23 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the indicated claims of copending Application No. 09/815,621 ('621). Specifically, claims 1 and 19 are disclosed in claim 22, the presence of the language "solid-state" serves only to narrow the '621 claim. The instant claim 1 is broader and therefore the rejection is proper.

13. Claims 2-7 and 22 are rejected in view of claim 30. It is noted that claim 33-37 and 41-46 disclose with the claim limitations with greater specificity, but that claim 30 is more than adequate to properly support an Obviousness type Double Patenting rejection.

14. Claims 8-12 and 14 are rejected in view of claim 6 of '621. It is noted that claims 3-6 disclose with the claim limitations with greater specificity, but that claim 6 is more than adequate to properly support an Obviousness type Double Patenting rejection.

15. Claim 16 and 23 are rejected in view of claim 23 of '621, wherein "lithium phosphorus oxynitride"

16. As to claims 17 and 18, claim 31 of '621 discloses supplying O₂ and N₂.

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17. As to claim 20 and 21, '621 discloses that both the first film and the third film are formed of lithium intercalation material.

18. Claims 1, 3-7 and 20 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the indicated claims of copending Application No. 09/816,603 ('603).

19. claims 1 and 20 are rejected over claim 16 as it depends from claim 11. As indicated above, the narrower claim forms the basis of a proper rejection when open claims language is used.

20. Claims 3-7 are rejected over claim 10 of '603. The '603 reference discloses the indicated 5 eV.

21. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

22. Claims 1-3, 8-11, 19, 20, 24, and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent No. 4,333,808 to Bhattacharyya ('808).

23. The '808 reference reads on the claim 1 as follows, both disclose a method comprising providing a substrate and forming an electrode first film (deposit metal on the substrate); forming

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an electrolyte second film (metal oxide), wherein forming the electrolyte second film includes depositing electrolyte material (metal oxide) using a deposition source (R-F sputtering); and supplying energized particles (ion beam implantation) from a second source (O⁺ on N⁺) such that the particles provide energy to the electrolyte material to deposit the electrolyte material into a desired film structure (convert crystalline to amorphous); and forming an electrode third film on the second film (counter electrode on electrolyte).

24. As to claims 2 and 3, disclosing the method of claim 1, wherein supplying energized particles includes supplying ions having an energy of greater than about 5 eV and 3000 eV. At column 3, line 7 *et seq*

25. As to claim 8-11 and 22, disclosing that the electrolyte film has a thickness of less than 5000 Å, 2500 Å, 1000 Å, 500 Å, 1nm to 1000nm, respectively, the same is disclosed at column 3, line 8 *et seq*.

26. As to claims 19-21 disclosing the method of claim 1, wherein forming the electrolyte film includes forming the electrolyte film to a thickness sufficient to insulate the electrode first film from the electrode second film and to allow ion transport between the electrode first film and the electrode second film. Inherently the transition metal possess the indicated characteristics, see column 3, line 50 *et seq*. discussing dielectric constants. The oxide is the intercalation layer.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 4,333,808 and PGPub 2001/0014398. ('398). The '808 reference identically discloses the claimed invention except it fails to explicitly disclose that the energized particles have an energy in the range of 5eV to 500eV, 5eV to 250eV, 10eV to 200eV, and 0eV to 40eV. The '962 reference provides the missing element and explicitly provides the motivation for making the instant combination. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine '808 and '398 as taught by '398, since the '398 reference states at paragraphs 69 and 70 provide the missing elements and explicitly provide the motivation for making the instant combination. The artisan would have been motivated to make the instant combination disclosing that laminate induced substrate stresses can be controlled and decreased by increasing the ion energy the deposition process to a range of from about 200-1,000 eV. The reference goes on to state that in one embodiment the energy is: "preferably from about 100-150 eV, and most preferably from about 100-140 eV) per carbon ion. At these energies, films 7 (i.e. layer 3 in the FIG. 2 embodiment) emulate diamond." In a larger sense, the values recited amount to little more than a results dependant variable, well within the grasp of one of ordinary skill in the relevant art.

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2. Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 4,333,808 and United States Patent No. 6,576,369 ('369).

3. As to claims 12-15, disclosing that the electrolyte second film has a thickness of various values.

4. The art is with replete with teaching of various thickness layers. The '808 reference identically discloses the claimed invention except it fails to explicitly disclose that the electrolyte film has a thickness of 10-100 Angstroms. The '369 reference provides the missing element and explicitly provides the motivation for making the instant combination. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine '808 and '369 as taught by '369. The '369 patent teaches the disclosed range and the reason behind altering the range. Specifically, the '369 patent teaches that if the crystallite size is less than 100 Angstroms, the crystallite is so small as to introduce a significant disturbance into the crystal lattices, and it does not allow lithium ions entering through the open interstices to be efficiently received therein. On the other hand, in order to achieve a crystallite size exceeding 2000 Angstroms a damaging prolonged heat treatment is required. The crystallite size is more preferably in the range of 500 to 1500 Angstroms. See e.g. column 8, line 14 et seq. Elsewhere the crystallite has a reported diameter of 100 to 2000 Angstroms (20010051300).

5. Claims 16-18, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 4,333,808 and PGPub 2002/0076616 to Lee ('616).

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6. Claims 16-18 and relate to depositing an Li_3PO_4 electrolyte material, supplying energized nitrogen particles, and reacting the nitrogen particles with the Li_3PO_4 electrolyte material, and providing a nitrogen-enriched atmosphere in which the Li_3PO_4 electrolyte material is deposited.

7. The '808 reference identically discloses the claimed invention except it fails to explicitly disclose the steps relating to Li_3PO_4 . The '616 reference provides the missing element and explicitly provides the motivation for making the instant combination. Specifically at paragraph 65, the '616 reference teaches that the solid electrolyte, $\text{Li}_x\text{PO}_y\text{N}_z$, layer was deposited by RF magnetron sputtering of a Li_3PO_4 target in a nitrogen atmosphere. The energized nitrogen is taught in the '808 reference. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine '808 and '616 as taught by '616, since '616 states at paragraph [0063] that such a modification long term capacity stability. See also paragraph [0050] on especially on page 6.

8. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over 4,333,808 and United States Patent No. 5,202,196 Wang et al. ('196).

9. Claims 24 and 25 disclose that the electrolyte film is an oxide of aluminum or silicon. The same is disclosed in '196, as is the motivation for making the claimed combination. The '808 identically discloses the claimed invention except '808 fails to explicitly disclose that the

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oxide of silicon is an electrolyte (see example 1 of '808). The '196 reference provides the missing element and explicitly provides the motivation for making the instant combination. Specifically '196 discloses "to further increase the capacity, it is preferred to add aluminum hydroxide to the colloidal electrolyte. The content of aluminum hydroxide in the colloidal electrolyte (based on the weight of the colloidal electrolyte as 100%) is preferably 0.1-0.5 wt. % (based on aluminum oxide). The silica sol as one of starting materials for producing the colloidal electrolyte is a commercial product, which contains 10-30% of silicon dioxide..."

10. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine '808 and '196 as taught by '196, since it indicates that the combination results in improved capacity.

Conclusion

11. Applicant is hereby put on notice that the instant invention, as currently claimed, may properly be subjected to additional restriction/election requirements. The indicated claims have been treated in this Official action because searching the various inventions did not present an undue burden. Nonetheless, substantive amendment of the claims, or the addition of new claims, arguments requiring different claim construction that require an additional search can and likely will result in additional restriction/election requirements.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gentle E. Winter whose telephone number is (703) 305-3403.

The examiner can normally be reached on Monday-Friday 7:00-3:30.

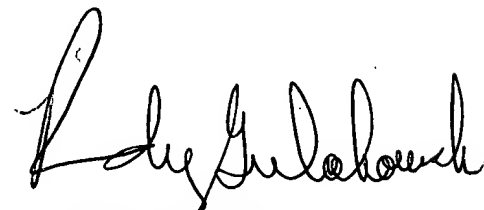
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13. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy P. Gulakowski can be reached on (703) 308-4333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

14. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Gentle E. Winter
Examiner
Art Unit 1746

October 20, 2003

A handwritten signature in black ink, appearing to read 'Randy Gulakowski', is written over a printed name and title block.

RANDY GULAKOWSKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700